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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/383,340	08/25/1999	STEVEN KLEIMAN	NAP-010	6451

22883 7590 10/22/2002
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EXAMINER

KUPSTAS, TOD A

ART UNIT	PAPER NUMBER
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2153

DATE MAILED: 10/22/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

PA

Office Action Summary

Application No.

09/383,340

Applicant(s)

KLEIMAN, STEVEN

Examiner

Tod Kupstas

Art Unit

2153

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 July 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23-58 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 23-58 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 13.
- ☐ Interview Summary (PTO-413) Paper No(s). _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other:

Art Unit: 2153

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 23-26, 28, 34-38, 40, 46-50, 52, 58 are rejected under 35 U.S.C. 102(b) as being anticipated by Hemphill et al. (US 5,781,716).

As set forth in claim 23, Hemphill discloses a file server including a set of storage elements (102, 202, (note that these storage systems, can also be seen as each having a plurality of storage elements, i.e. the disks located at each storage system)); at least a pair of nodes disposed in said file server (100, 200), each of said nodes capable of processing file server commands for said set of storage elements; at least one inter-node connectivity element coupled to said nodes; and a connection for coupling said file server commands to said nodes; see col. 2, lines 20-54.

As set forth in claim 24, Hemphill discloses a file server wherein each of said pair of nodes (100, 200) are disposed to failover to each other (it is the nature of the fault recovery controllers (116, 216, to provide backup to the systems).

As set forth in claim 25, Hemphill discloses a file server wherein each of said pair of nodes (100, 200) includes a processor and a memory; see col. 3, lines 10-67 (having a server contain a

Art Unit: 2153

processor and memory is inherent to what a server is, furthermore it can be inferred from the disclosure that the server possesses such elements by being capable to run applications).

As set forth in claim 26, Hemphill discloses a file server wherein each of said storage elements corresponds to one node of said pair (each disk subsystem corresponds to one of the server nodes); each of said storage elements is coupled to both nodes of said pair (both of 102 and 202 are coupled through 118 and 218); whereby both nodes of said pair are equally capable of controlling said storage elements.

As set forth in claim 28, Hemphill discloses a file server wherein scaling for a file server system that includes said file server can be achieved by coupling said pair of nodes to another pair of nodes in another file server through said inter-node connectivity element; see col. 1, line 17-col. 12, line 7.

As set forth in claim 34, Hemphill discloses a file server wherein said pair of nodes includes a first node (100) and a second node (200); wherein said first node controls said storage elements in response to said file server commands while said second node is coupled to said storage elements and does not control said storage elements in response to said file server commands; see col. 2, lines 20-54 and see col. 3, lines 10-67.

As set forth in claim 35, Hemphill discloses a method of operating a file server including operating at least a pair of nodes (100, 200) disposed in said file server, each of said nodes capable of processing file server commands for a set of storage elements (102, 202); communicating with other nodes in at least one other file server through at least one inter-node connectivity element

Art Unit: 2153

coupled to said nodes; and coupling said file server commands to said nodes; see col. 11, line 17-col. 12, line 7.

As set forth in claim 36, Hemphill discloses a method of operating a file server wherein each of said pair of nodes are disposed to failover to each other; see col. 2, lines 20-54 (it is the nature of the fault recovery controllers (116, 216, to provide backup to the systems).

As set forth in claim 37, Hemphill discloses a method of operating a file server wherein each of said pair of nodes includes a processor and a memory; see col. 3, lines 10-67 (having a server contain a processor and memory is inherent to what a server is, furthermore it can inferred from the disclosure that the server possesses such elements by being capable to run applications).

As set forth in claim 38, Hemphill discloses a method of operating a file server wherein each of said storage elements corresponds to one node of said pair; each of said storage elements is coupled to both nodes of said pair; whereby both nodes in said pair are equally capable of controlling said storage elements; see controllers 112, 116, or 216, 212).

As set forth in claim 40, Hemphill discloses a method of operating a file server wherein scaling for a file server system that includes said file server can be achieved by coupling said pair of nodes to another pair of nodes in another file server through said inter-node connectivity element; see col. 11, line 17-col. 12, line 7.

As set forth in claim 46, Hemphill discloses a method of operating a file server wherein said pair of nodes includes a first node (100) and a second node (200); wherein said first node controls (112) said storage elements in response to said file server commands while said second

Art Unit: 2153

node (200) is coupled to said storage elements (202) and does not control said storage elements in response to said file server commands.

As set forth in claim 47, Hemphill discloses a memory storing information including instructions, the instructions executable by a processor to operate a file server, the instructions comprising: operating at least a pair of nodes (100, 200) disposed in said file server, each of said nodes capable of processing file server commands for a set of storage elements; communicating with other nodes in at least one other file server through at least one inter-node connectivity (118, 218) element coupled to said nodes; and coupling said file server commands to said nodes.

As set forth in claim 48, Hemphill discloses a method of operating a file server wherein each of said pair of nodes are disposed to failover to each other; see col. 2, lines 20-54.

As set forth in claim 49, Hemphill discloses a method of operating a file server wherein each of said pair of nodes includes a processor and a memory; see col. 3, lines 10-67 (having a server contain a processor and memory is inherent to what a server is, furthermore it can inferred from the disclosure that the server possesses such elements by being capable to run applications).

As set forth in claim 50, Hemphill discloses a method of operating a file server wherein each of said storage elements corresponds to one node of said pair; each of said storage elements is coupled to both nodes of said pair; whereby both nodes in said pair are equally capable of controlling said storage elements.

As set forth in claim 52, Hemphill discloses a method of operating a file server wherein scaling for a file serve server system that includes said file server can be achieved by coupling said

Art Unit: 2153

pair of nodes to another pair of nodes in another file server through said inter-node connectivity element (118, 218); see col. 11, line 17-col. 12, line 7.

As set forth in claim 58, Hemphill discloses a method of operating a file server wherein said pair of nodes includes a first node (100) and a second node (200); wherein said first node (100) controls (112) said storage elements in response to said file server commands while said second node (200) is coupled to said storage elements (202) and does not control said storage elements in response to said file server commands.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 27, 39, and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hemphill et al. (US 5,781,716).

As set forth in claim 27, 39, and 51, Hemphill does not disclose having a NUMA network. A NUMA network is the state wherein a system has both DMA and remote memory access. Although not explicitly stated it would appear that Hemphill actually already maintains the two memory access states through the servers. Official notice is taken to having a NUMA network. It would have been obvious to a person of ordinary skill in the art at the time this invention was

Art Unit: 2153

made to have provided the system of Hemphill, with the NUMA system. The rationale is as follows: It would have been desirable to have permitted memory access to clients in a variety of ways. As having both direct and remote memory access is a standard way of achieving memory access, one of ordinary skill would have been motivated by the desire to provide means for accessing the memory to have provided both direct and remote memory access to the system of Hemphill, thereby having provided efficient means for accessing the memory.

5. Claims 29, 41, and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hemphill et al. (US 5,781,716).

As set forth in claims 29, 41, 53, Hemphill does not disclose a system wherein said set of storage elements coupled to a least one said pair includes a RAID storage system. Hemphill does mention that an array of disks is used; see col. 11, line 61. Official notice is taken to having a RAID storage system. It would have been obvious to a person of ordinary skill in the art at the time this invention was made to have provided the system of Hemphill, with a RAID storage system. The rationale is as follows: It would have been desirable to have had a RAID storage device to provide high levels of data integrity and availability. As having a RAID storage device is a standard way of storing data, one of ordinary skill would have been motivated by the desire to provide means for storing large amounts of data to have provided a RAID storage device to the system of Hemphill, thereby having provided cost-effective and efficient means for storing data.

Art Unit: 2153

6. Claims 30-33, 42-45, and 54-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hemphill et al. (US 5,781,716) in view of Kern et al. (US 5,720,029).

As set forth in claim 30, Hemphill discloses a file server wherein said pair of nodes includes a first node (100) and a second node (200); wherein when said file server commands are directed to said first node, said file server commands are executed at said first node.

As set forth in claim 31, Hemphill discloses a file server wherein when said file server commands are directed to said first node (100) and said first node is inoperable, said file server commands are executed at said second node (200) (the system is designed for fault recovery); and wherein when said file server commands are directed to said second node and said second node is inoperable, said file server commands are executed at said first node; see col. 2, lines 20-54.

As set forth in claim 32, Hemphill discloses a file server wherein said pair of nodes includes a first node (100) and a second node (200); and wherein said pair of nodes are disposed to failover from said first node to said second node; see col. 2, lines 20-54.

As set forth in claim 33, Hemphill discloses a file server wherein said pair of nodes includes a first node (100) and a second node (200); and said pair of nodes are disposed to failover from said first node to said second node; see col. 2, lines 20-54.

As set forth in claim 42, Hemphill discloses a method of operating a file server wherein said pair of nodes includes a first node (100) and a second node (200); wherein when said file server commands are directed to said first node, said file server commands are executed at said first node (100).

Art Unit: 2153

As set forth in claim 43, Hemphill discloses a method of operating a file server wherein when said file server commands are directed to said first node (100) and said first node is inoperable, said file server commands are executed at said second node (200); and wherein when said file server commands are directed to said second node and said second node is inoperable, said file server commands are executed at said first node; see col. 2, lines 20-54.

As set forth in claim 44, Hemphill discloses a method of operating a file server wherein said pair of nodes includes a first node and a second node; and wherein said pair of nodes are disposed to failover from said first node to said second node see col. 2, lines 20-54..

As set forth in claim 45, Hemphill discloses a method of operating a file server wherein said pair of nodes includes a first node (100) and second node (200); and said pair of nodes are disposed to failover from said first node to said second node; see col. 2, lines 20-54.

As set forth in claim 54, Hemphill discloses a method of operating a file server wherein said pair of nodes includes a first node (100) and a second node (200); wherein when said file server commands are directed to said first node, said file server commands are executed at said first node; and wherein when said file server commands are directed to said second node (200), said file server commands are executed at said second node; see col. 2, lines 20-54.

As set forth in claim 55, Hemphill discloses a method of operating a file server wherein when said file server commands are directed to said first node (100) and said first node is inoperable, said file server commands are executed at said second node (200); and wherein when

Art Unit: 2153

said file server commands are directed to said second node (200) and said second node (200) is inoperable, said file server commands are executed at said first node; see col. 2, lines 20-54.

As set forth in claim 56, Hemphill discloses a method of operating a file server wherein said pair of nodes includes a first node (100) and a second node (200); wherein said first node responds to said file server commands while said second node records said file server commands; and wherein said pair of nodes are disposed to failover from said first node to said second node; see col. 2, lines 20-54.

As set forth in claim 57, Hemphill discloses a method of operating a file server wherein said pair of nodes includes a first node (100) and a second node (200); wherein said first node (100) responds to a first one of said file server commands; wherein said second node responds to a second one of said file server commands while said first node records said second one of file server commands; and said pair of nodes are disposed to failover from said first node to said second node; see col. 2, lines 20-54.

Hemphill does not disclose having the recovery control for each respective node performing a back-up copying operation concurrent with the receipt of commands from a user. Kern discloses a system wherein commands to the primary site are copied on the secondary site as well in order to provide a mechanism for fault recovery. It would have been obvious to a person of ordinary skill in the art at the time this invention was made to have provided the recovery controller of Hemphill with the means for concurrent recording system commands for fault-recovery purposes, as taught by Kern. The rationale is as follows: It would have been desirable to

Art Unit: 2153

have had means for transparently switching the control of the system. As Kern teaches the desirability of concurrently recording commands sent to the system in a secondary system, one of ordinary skill would have been motivated by Kern's teaching to have provided the system of Hemphill, with concurrent recording of commands in the recovery controllers, thereby having provided rapid and transparent fault-recovery for the system of Hemphill.

Response to Arguments

7. Applicant's arguments filed 7/5/2002 have been fully considered but they are not persuasive.

Applicant argues that Hemphill does not disclose "a pair of nodes disposed in a file server, each of which is capable of processing file server commands for the set of storage elements." The examiner disagrees, the file server system in Hemphill discloses two servers which correspond to the nodes, which are fault tolerant being capable of switching to the other node in the event of failure. This meets the limitations of the claims. Applicant mis-characterizes Hemphill's system. The Examiner contends that the nodes correspond to each of the servers disclosed, the servers together form the file server, wherein one server backs up the other (in addition this mirrored system can include additional pairs of servers). Furthermore, the nodes are connected to multiple disk storage systems and have the capacity to switch between the servers. This meets the limitations of the claims as newly written.

Art Unit: 2153

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tod Kupstas whose telephone number is (703) 305-2655.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenton Burgess, can be reached at (703) 305-4792. The fax phone number for this art unit is (703) 308-7201. Any inquiry of a general nature or relating to the status of this

Art Unit: 2153

application or proceeding should be directed to the technology center receptionist whose telephone number is (703) 305-3900.

Tod Kupstas


October 9, 2002



MOUSTAFA M. MEKY
PRIMARY EXAMINER